



STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
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MEMORANDUM

To: All Users of the Delaware Manual on Uniform Traffic Control Devices

From: Traffic Field Operations, Sign Installation Section

Date: October 15, 2021

SUBJECT: Sign Reflectivity Program Report for 2020-2021 Season

The Delaware Manual on Uniform Traffic Control Devices (DE MUTCD) Section 2A.08, Paragraph 2 requires public agencies to maintain minimum retroreflectivity levels on their signs through an approved assessment method. To maintain compliance with this requirement as well as to ensure the continued safety of Delaware's roadways, the Delaware Department of Transportation's Signing Section instituted a Sign Reflectivity Program in 2007.

Program Structure

The Sign Reflectivity Program is split up into seasons, with each season running from September 1 to August 31 of the following year. The first six months of each season (September-February) are spent focusing on performing nighttime sign inspections. The longer hours of darkness during the fall and winter makes this the ideal time of the year for night inspections. Employees assess the reflectivity of signs during nighttime conditions to maximize reflectivity potential. Once each assigned road has been reviewed, sign replacements are ordered and tracked through an internal reporting system (Maximo) to beginning the sign fabrication process for any signs that did not meet the reflectivity standards.

During the second half of the season (March - August), the focus is shifted to sign replacement. Although signs deemed as having inadequate reflectivity values are replaced all year long, the signing staff focuses on completing the replacements on every road inspected during the previous six months before the next season begins. Doing this ensures the backlog of roads with outstanding sign replacements does not become unmanageable, and each season's replacements are completed before the next season starts.

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At the beginning of each season, staff is given a map of their assigned area depicting every road with completed night inspections from the previous ten (10) seasons. Their goal is to complete the inspections and replacements on approximately 10% of the roads in their area each year, with the ultimate goal of completing all roads in their area within ten (10) years.

The most commonly used reflective sheeting in Delaware is known as Type IV, or High-Intensity. Type IV sheeting has an expected lifespan of ten (10) years. With inspections on a ten-year cycle, the intent is to have every sign inspected at least once in its lifetime.

Reflectivity Assessment Methods

The DE MUTCD has five approved methods for maintaining sign retroreflectivity. Delaware uses a combination of two of those five methods.

- 1) **Visual Nighttime Inspection** - Staff assesses signs' reflectivity at night using the headlights of an approved vehicle. As part of this year's effort, training signs were added to the Sign Reflectivity Program (see picture below). Each area was issued a sign with brand new reflective material on the left side and a much older piece of reflective material on the right. These training signs help provide a guideline for when signs should be replaced.

Picture 1: Training signs



- 2) **Expected Sign Life** - Installation date stickers are placed on every sign upon installation. In addition to clarifying many issues regarding sign maintenance responsibility, installation date stickers have been extremely helpful in helping to gauge expected sign life.

DelDOT does not currently use the other listed methods of Measured Sign Reflectivity in the DE MUTCD, including Blanket Replacements or Control Signs. The Signing Section experimented with Measured Sign Reflectivity for several years but found the devices to be unwieldy, expensive, and time consuming. The Blanket Replacement Method is not beneficial to DelDOT since most of the work is driven by new sign installations or changes to existing signage. This results in each road having signs of varying ages. Blanket Replacements would cause DelDOT to replace many

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signs that still have several years of reflectivity left, resulting in a financial hardship as well as efficiency issues. Control Signs would require each area to maintain test decks with multiple signs to gauge the lifespan of the reflective material. The manufacturer's expected lifespan in conjunction with the installation date stickers provide the same information without the need to maintain several test decks.

The 2020-2021 Season

Staff participation in this year's Sign Reflectivity Program season were down from the previous year. With employees in every section having to absorb additional duties and on-call shifts, nighttime inspections were limited. And with this being the third year of the Program's new format, each section is becoming more comfortable with the process and has begun planning their daily sign work around the replacements from Night Inspections. Despite these difficulties, each section still performed a significant number of inspections, shown below in Tables 1 and 2.

Table 1. Total Hours of Overtime for Night Inspections

County	2019-2020 Hours	2020-2021 Hours
New Castle (above canal)	128.5	31.25
Kent & New Castle (below canal)	10.5	47.25
Sussex	20.5	47
Total Overtime Hours	159.5	125.5

Table 2. Sign Reflectivity Season Totals

County	2019-2020 Signs Inspected	2020-2021 Signs Inspected	2019-2020 Signs Replaced	2020-2021 Signs Replaced
New Castle (above canal)	3531	1531	2918	1056
Kent & New Castle (below canal)	2664	2278	175	43
Sussex	2797	2992	1688	144
Total	8992	6801	4781	1243

With the continuation of the Sign Reflectivity Program, the program has become a vital component to help improve safety in conjunction with Delaware's Strategic Highway Safety Plan (SHSP).

Future Goals:

- During the next season, we will be working with the Pavement Markings Section to ensure coordination occurs with other capital projects, such the Pavement and Rehabilitation Program. Roads identified by a capital project for the coming year can help minimize overlapping efforts, especially if the project intends to replace signage as part of their efforts.
- Continue coordination with the Guide Sign Section to add I-Beam and Overhead signage to the Sign Reflectivity Program map.
- The potential to evolve the Sign Reflectivity Program into a Sign Inventory remains a long-term goal.



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
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
- Continue to correlate night inspections with safety initiatives identified in Delaware's Strategic Highway Safety Plan (SHSP), as a nighttime sign inspection and replacement is a low-cost improvement to enhance sign visibility, especially at night.


Attachments:

Attached are maps created using ARCGIS for each of the three counties. The roads shown in green are roads inspected and had all the failed signs replaced in the 2020 – 2021 Season. The roads shown in red are the roads inspected and replaced in the previous nine years. Since the Program operates on a revolving 10-year cycle, any roads completed more than 10 years ago will not be shown on the map.









Legen

-  '2020-2021 Season'
 -  '2019-2020 Season'
 -  '2018-2019 Season'
 -  '2017'
 -  '2015'
 -  '2013'
 -  '2012'
 -  '2011'
 -  State and County Boundary
 -  CENTER LINE

